



BEACON FEN ENERGY PARK

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Bicker Fen Solar Farm

Bat Activity Survey Report

Low Carbon

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Table of Contents

1.	Introduction.....	5
1.1	Background.....	5
1.2	The Scheme	5
1.3	Site Description.....	5
1.4	Scope of the Report	5
2.	Legislation and Planning Policy.....	6
2.1	Legislation	6
2.2	European Protected Species Mitigation Licenses	7
2.3	Local Biodiversity Action Plan.....	7
3.	Methods.....	9
3.1	Field Survey.....	9
3.2	Limitations and Assumptions	11
4.	Results	12
4.1	Introduction	12
4.2	Transect Surveys	12
4.3	Static Bat Detector Survey	12
5.	References	15
	Appendix A: Survey Results	16

Tables

Table 1.	Summary of Bat Activity Index (BAI) from static bat detector surveys	13
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1. Introduction

1.1 Background

- 1.1.1 AECOM was instructed by Low Carbon to undertake bat activity surveys for the proposed Bicker Fen Solar Farm (hereafter referred to as the 'Scheme'). The Preliminary Ecological Appraisal (Ref 5-1), identified that the habitat within the Scheme boundary (the Site) was suitable to support commuting and foraging bats and that surveys were required to determine the presence and assemblages of bat species using the Site.
- 1.1.2 Therefore, AECOM was instructed to undertake bat activity surveys within the main sites, proposed for solar photo-voltaic (PV) panels and an appropriate survey buffer to record the species, distribution and numbers of bats utilising the Site and adjacent habitat.

1.2 The Scheme

- 1.2.1 The Bicker Fen Solar Farm (as shown in Figures 1.1 to 1.6 in Appendix A) is a proposed new solar energy farm, co-located with battery storage. The Scheme would export or import up to 500MW of electricity to and from the National Grid. The proposed generation capacity of the Scheme means it is a Nationally Significant Infrastructure Project (NSIP) and as such would require a Development Consent Order (DCO).

1.3 Site Description

- 1.3.1 The Scheme is located on two sites (termed the 'northern site' and 'southern site' hereafter, where referring to specific locations and collectively as 'the Site'). The northern site is located to the east of the villages of Howell and Ewerby Thorpe (Ordnance Survey (OS) grid reference TF145474) and the southern site is located in the vicinity of Thorpe Latimer (OS grid reference at TF122404). Both sites are within the district of North Kesteven.
- 1.3.2 Both sites are dominated by arable fields with game crop strips, hedgerows, woodland blocks, numerous mature trees and plantation woodland. The Site is surrounded by mainly arable and improved grassland livestock fields.
- 1.3.3 Details of any grid connections between sites and to substations were unknown at the time of undertaking the surveys for bat activity and did not form part of the commissioned scope reported in this document

1.4 Scope of the Report

- 1.4.1 The objective of the bat activity survey, reported in this document, is to determine the presence and assemblages of foraging and commuting bat species within the Site.
- 1.4.2 This report includes the following information:
- relevant legislation and policy;
 - methods for field-based assessments undertaken in 2022 and 2023;
 - limitations to the surveys undertaken and any assumptions made; and
 - survey results.

2. Legislation and Planning Policy

2.1 Legislation

2.1.1 The following wildlife legislation is relevant to bats in relation to the Scheme:

- Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats and Species Regulations) (Ref 5-2));
- Wildlife and Countryside Act 1981 (as amended) (the WCA) (Ref 5-3);
- Natural Environment and Rural Communities (NERC) Act 2006 (Ref 5-4);
- Countryside and Rights of Way (CRoW) Act 2000 (Ref 5-5); and
- The Environment Act 2021 (Ref 5-6).

2.1.2 The above legislation has been considered when planning and undertaking the commissioned survey work as detailed in section 3 of this report. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the Scheme.

European Legislation and Wildlife and Countryside Act

2.1.3 All bat species and their roosts are legally protected in the UK under European legislation through the Habitats and Species Regulations (Ref 5-2), which implements the EC Directive 92/43/EEC (the Habitats Directive) (Ref 5-7) through the provisions of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 5-8). Four bat species are further listed under Annex II of the Habitats Directive which implies that sites must be designated for their protection. These bat species are Barbastelle (*Barbastella barbastellus*), Lesser Horseshoe (*Rhinolophus hipposideros*), Greater Horseshoe (*Rhinolophus ferrumequinum*) and Bechstein's (*Myotis bechsteinii*). Under the WCA (Ref 5-3), bats and roosts are also protected through the designation of protected areas including Sites of Special Scientific Interest (SSSIs) and by promoting protections for such designated areas.

2.1.4 Taken together, the Habitats and Species Regulations (Ref 5-2) and the WCA (Ref 5-3) make it illegal to:

- deliberately capture or intentionally take a bat;
- deliberately or intentionally kill or injure a bat;
- be in possession or control of any live or dead bat or any part of, or anything derived from a bat;
- damage or destroy a breeding site or resting place of a bat;
- intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection;
- intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; and
- deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) affect significantly the local distribution or abundance of the species to which they belong.

2.1.5 A bat roost is defined as any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected regardless of whether or not the bats are present at a specific point in time.

The Countryside and Rights of Way Act

- 2.1.6 The CRoW Act 2000 (Ref 5-5) introduced the offence of 'reckless' disturbance of threatened species protected under the WCA. It added extended powers relating to the protection and management of SSSIs as well, including powers for entering management agreements, placing a duty on public bodies to further the conservation and enhancement of SSSIs, increasing penalties for conviction, and appeal processes for the notification, management and protection of SSSIs.

Natural Environment and Rural Communities Act and Environment Act 2021

- 2.1.7 Section 40 of the NERC Act (Ref 5-4) and updated by the Environment Act 2021 (Ref 5-6) places a legal obligation on public bodies in England to have a proactive duty to consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective and for particular living organisms and types of habitat which are of the greatest conservation importance (e.g. species of principal importance). Section 41 of the NERC Act (Ref 3) lists seven bat species: Barbastelle, Bechstein's bat, Noctule (*Nyctalus noctula*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared Bat (*Plecotus auritus*), Lesser and Greater Horseshoe Bats as species of principal importance for the purpose of conserving biodiversity.

2.2 European Protected Species Mitigation Licenses

- 2.2.1 Although the law provides strict protection for bats, it also allows this protection to be set aside (derogated) under Regulation 55 of the Habitats and Species Regulations (Ref 5-2) through the issuing of European Protected Species Mitigation Licences (EPSMLs). EPSMLs are issued for the purpose of:
- preserving public health;
 - preserving public safety; or
 - for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.
- 2.2.2 In accordance with the requirements of the Habitats and Species Regulations (Ref 5-2), a licence can only be issued where the following requirements are satisfied:
- there is no satisfactory alternative; and
 - the action authorised will not be detrimental to the maintenance of the population of the species concerned at a 'favourable' conservation status in their natural range.
- 2.2.3 Favourable conservation status is defined in Article 1(i) of the Habitats Directive (Ref 5-7) as when:
- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
 - the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
 - there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

2.3 Local Biodiversity Action Plan

- 2.3.1 The Site is located within the county of Lincolnshire (see section 1.3 of this report). The Lincolnshire Biodiversity Action Plan (3rd edition) (Ref 5-10) provides the local nature conservation strategy for identifying threats to species within the county and set out the action

plans necessary to conserve them. This Local BAP provides context to inform the identification of threatened and, or uncommon species within the relevant districts and, or county. It also identifies priorities for conservation and enhancement but confer no particular legislative or policy protection to the species identified. However, in some cases this is provided through related legislation and local planning policy.

2.3.2 The Lincolnshire BAP lists the following threats to bat species within the county:

- loss of breeding and winter hibernation sites in buildings, old trees and farmyard features, especially old stone farmyard buildings; through decay,
- demolition or conversion of buildings to other uses; or felling trees without suitable mitigation;
- disturbance and destruction of roosts e.g. due to building work;
- reduction in insect prey due to widespread pesticide use and deterioration of water quality has also been shown to affect food supply: contamination from a range of sources including pesticides, oil and fertilisers can affect invertebrate populations;
- loss of feeding and commuting habitats – through reduction in the quality and quantity of hedgerows, mature trees, ditches, drains, ponds and riverside habitats. Continuing loss of permanent pasture is especially concerning for some species;
- widespread confusion over/ ignorance of/ flouting of the law regarding bats; and
- floodlighting of churches and other buildings causing disturbance.

3. Methods

3.1 Field Survey

- 3.1.1 All field surveys were led by competent ecologists, familiar with bat ecology and surveying, and/ or full or associate members of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 3.1.2 Prior to the start of the surveys in each new location, a daytime site visit was undertaken for each location by the lead surveyor in order to plan the works, assess any health and safety issues on the Site, and record the context of the survey locations.

Survey Area

- 3.1.3 The survey area included all habitat within the Site and a maximum 50m survey buffer. The Site comprises of mostly low value suitability habitats for foraging and commuting bats and is dominated by open intensively managed arable fields with game crop strips. Potential higher value habitats are present such as hedgerows, woodland blocks, numerous mature trees and plantation woodland that are either outside the boundary of the Site or likely to be retained. In accordance with the bat survey guidelines (Ref 5-11), habitats assessed as being of overall low value for foraging and commuting bats require three activity transects surveys within one season capturing spring, summer and autumn.

Bat Activity Survey

- 3.1.4 Bat activity surveys were undertaken in 2022 and 2023 using five transect locations (T1 to T5, see Figures 1.1 to 1.6 in Appendix A) covering representative habitats across the Site. Each transect route (see Figures 1.1 to 1.6 in Appendix A) was surveyed in spring, summer and autumn (May 2023, August 2022 and September/October 2022 respectively). The transect routes were chosen so potential flight paths or foraging areas within the Site and between such areas and potential roost sites were assessed.
- 3.1.5 Each activity survey involved two surveyors walking a transect route which included a series of counts at pre-determined points along the transect (Figures 1.1 to 1.6 in Appendix A). These points were located at potentially higher value features with regards to foraging and, or commuting bats such as woodland edges and hedgerows. At each point, surveyors stopped and recorded bat activity for three minutes using bat echolocation detectors. All bat activity encountered whilst walking between points was also noted. The direction of the transects was varied during each survey visit in order to ensure different areas of the transect were walked at different times.
- 3.1.6 Surveyors carried full spectrum bat echolocation detectors (Batlogger M or Anabat Scout) to determine which species were present. In accordance with survey guidelines (Ref 5-11), dusk surveys were carried out from sunset to at least two hours after sunset. The time, location, numbers, species (where possible) and direction of flight were recorded for each bat pass (a discrete burst of echolocation heard, or bat activity observed) during the survey. Echolocation calls detected were analysed with specialist software comprising Bat Explorer, Kaleidoscope and Analook W to verify bat calls. Survey visits were conducted in this way where weather conditions allowed, with surveys scheduled to avoid nights with cold (<7°C), wet or windy conditions.
- 3.1.7 In addition to the transect surveys, five automated static bat detectors (one on each transect, comprising Anabat Express detectors with the same standard microphones and setting) were placed across the Site in representative habitats to record bat activity over a longer period of time (i.e. a minimum of five nights per season). This is the recommended number of detectors required (Ref 5-11) and ensured full coverage of the Site. The locations of the static detectors are presented on Figures 1.1 to 1.6 in Appendix A.

- 3.1.8 All microphones were located at least one metre above the ground on trees, so they were clear of vegetation between the adjacent habitats and the microphone. All detectors were set on default settings to record in zero-crossing format. The static detectors were set up to record bat calls from sunset to sunrise for the recommended minimum of five consecutive nights per season in spring, summer and autumn (see deployment dates and weather conditions in Tables A2 and A3 in Annex A).
- 3.1.9 Weather conditions were recorded using the temperate log files on each static detector and rain/wind conditions were recorded at the nearest weather station using online resources (Ref 5-12). Weather data were taken into consideration in the analysis. Where any prolonged period of strong wind >25mph or rain was experienced, the static detectors were left for longer on site to obtain sufficient data during optimum weather conditions for bat activity.

Data Analysis

- 3.1.10 The transect data were described in relation to species, number of passes (and where possible number of bats), observed behaviour, temporal and spatial trends. The static bat detector data collected were analysed to determine the total number of bat passes for each species or species group (depending on the level of identification possible from the recordings made) and then used to derive a metric - the Bat Activity Index (BAI) for the bat activity at each survey location.
- 3.1.11 These analyses provide an indication of:
- seasonal variation in species activity and composition at each survey location;
 - relative levels of bat activity across the Scheme; and
 - potential roosting sites, important foraging areas and commuting routes.

Bat Activity Index (BAI)

- 3.1.12 BAI values were calculated by averaging the total number of bat passes per hour for each static bat detector unit at each location per month. The term 'pass' is defined as a single file made up of bat pulses of a single species i.e. this may be one bat in a recorded sound file or many bats in a single file.
- 3.1.13 Limited guidance is available on what constitutes low to high bat activity on a Site based on number of passes. As such, a relative scale is used by AECOM that follows the protocol used by Ecobat (Ref 5-13) in this report where:
- low activity: 0-20th percentiles;
 - low to moderate activity: 21st-40th percentiles;
 - moderate activity: 41st-60th percentiles;
 - moderate to high activity: 61st-80th percentiles; and
 - high activity: 81st-100th percentiles.
- 3.1.14 For transect data relative bat activity levels were described to aid the discussion. No guidance is available on what constitutes low, moderate or high bat activity based on number of passes during a transect survey (based on a transect survey time of 2 to 3 hours). As such a relative scale is used by AECOM in this report where:
- very low activity is up to 5 passes per survey;
 - low activity is 6 to 25 passes per survey;
 - moderate activity is 26 to 99 passes per survey; and
 - high activity is 100 passes per survey.

- 3.1.15 Reference to surveyor observations, including numbers of individual bats seen, flight routes and behaviour and detectability of individual species are also made to inform the overall evaluation.

3.2 Limitations and Assumptions

- 3.2.1 There were some rain showers experienced during the May 2023 static detector surveys, however bats were still recorded, including the highest activity overall at Static location 2 and therefore this is not considered to affect the overall results. At one location only four nights of data (as opposed to five) were collected due to the memory card being full but additional nights of data were collected at other times of the year to compensate for this, resulting in 77 nights of data across the whole Site. There were no other limitations with the surveys undertaken. Therefore, it is considered that sufficient representatives of all habitat types have been covered within the entirety of the bat activity survey period, to allow for a comprehensive assessment of foraging and commuting bat species present.

4. Results

4.1 Introduction

- 4.1.1 The results of these surveys and the Bat Activity Index (BAI) (as per the method in Section 3.1) are summarised below, with full results presented in Appendix A. Transect mapping and static bat detector locations are presented in Figures 1.1 to 1.6, Appendix A.

4.2 Transect Surveys

- 4.2.1 A total of 15 transects were surveyed in 2022 and 2023 to provide a representative coverage of the habitats within the Site. This comprised five transects (T1, T2, T3, T4 and T5) as presented in Figures 1.1 to 1.6, Appendix A), each surveyed in summer and autumn of 2022 and spring 2023. The transects included sampling representative habitats within the Scheme, comprising hedges/ tree lines, woodland edge, roadside verges and arable field margins.
- 4.2.2 Species recorded during the bat transect surveys comprised at least six species: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, Noctule, *Myotis* species, Barbastelle and Noctule.

Summer 2022

- 4.2.3 Five transects were surveyed between 8th and 12th August. Bat activity is shown on Figures 1.1 and 1.2, Appendix A. There was low to high activity across the transects dominated by Common Pipistrelle and Soprano Pipistrelle, with low *Myotis* species (southern Site only) and Noctule activity (northern Site only). Highest activity was on Transect 4 along the western boundary of the northern Site.

Autumn 2022

- 4.2.4 Five transects were surveyed on 13th, 14th, 26th, 27th September and 17th October. Bat activity is shown on Figures 1.3 and 1.4, Appendix A. There was low to high activity across the transects dominated by Common Pipistrelle and Soprano Pipistrelle, with low *Myotis* species, Barbastelle (a few passes on boundary features on Transect 4, northern Site and on Transect 3, southern Site) and Brown Long-eared Bat activity. Highest activity was on Transect 5 along the eastern boundary watercourse of the northern Site.

Spring 2023

- 4.2.5 Five transects were surveyed on 2nd, 3rd, 4th, 15th and 16th May. Bat activity is shown on Figures 1.5 and 1.6, Appendix A. There was low to moderate activity across the transects dominated by Common Pipistrelle and Soprano Pipistrelle, with low *Myotis* species and Barbastelle Bat activity recorded on the southern Site only. Highest activity was on Transect 5 along the eastern boundary watercourse of the northern Site and along a roadside verge on Transect 1 (southern Site).

4.3 Static Bat Detector Survey

- 4.3.1 Full results of the 2022 and 2023 surveys are provided in Appendix A with static detector locations presented on Figure 1 in Appendix A. A total of 72 nights of data were analysed from five statics located across the Site, resulting in 3379 records of bats. Species recorded on the static bat detectors comprised at least nine species; Common Pipistrelle, Soprano Pipistrelle, Noctule, Leisler's Bat, Daubenton's Bat (*Myotis daubentonii*), unknown *Myotis* species (Daubenton's Bat, Whiskered Bat and/or other species), Serotine (*Eptesicus serotinus*), Barbastelle and Brown Long-eared Bat.
- 4.3.2 A summary of the BAI from static bat detector surveys is presented in Table 1, Charts 1 and . Static 2 (next to an irrigated reservoir), had the highest activity in the spring (May 2023), with moderate to high activity also recorded here in the summer (August 2022) and autumn

(September/October 2022). Static 5 (near a copse on the southern Site) also had high activity in the spring and summer. The lowest activity was from Static 3 (strip of woodland / watercourse within the southern Site) in the spring and Static 1 in autumn (woodland edge within the northern Site).

- 4.3.3 Common Pipistrelle had the highest number of passes, with a total of 2748 passes (see Chart 1), followed by *Myotis* species (313 passes), then Soprano Pipistrelle (171 passes) and Noctule (102 passes). Lower number of passes were recorded of Barbastelle (33 passes), Brown Long-eared Bat (28 passes), Leisler's Bat (18 passes), Noctule or Leisler's Bat (2 passes), Common or Soprano Pipistrelle (1 pass), Serotine (1 pass), and Daubenton's (1 pass).

Table 1. Summary of Bat Activity Index (BAI) from static bat detector surveys

Location	BAI* per hr	Activity Level	BAI* per hr	Activity Level	BAI* per hr	Activity Level
Static	Spring		Summer		Autumn	
1	1.69	Moderate Activity	1.96	Moderate Activity	0.62	Low Activity
2	40.86	High Activity	3.09	Moderate-High Activity	2.83	Moderate-High Activity
3	0.91	Low Activity	2.02	Moderate-High Activity	1.38	Moderate Activity
4	1.38	Moderate Activity	1.36	Low-Moderate Activity	0.31	Low Activity
5	16.00	High Activity	5.91	High Activity	0.92	Low-Moderate Activity

* BAI = Bat Activity Index (overall number of bat passes per hour)

Chart 1: Total number of passes per species

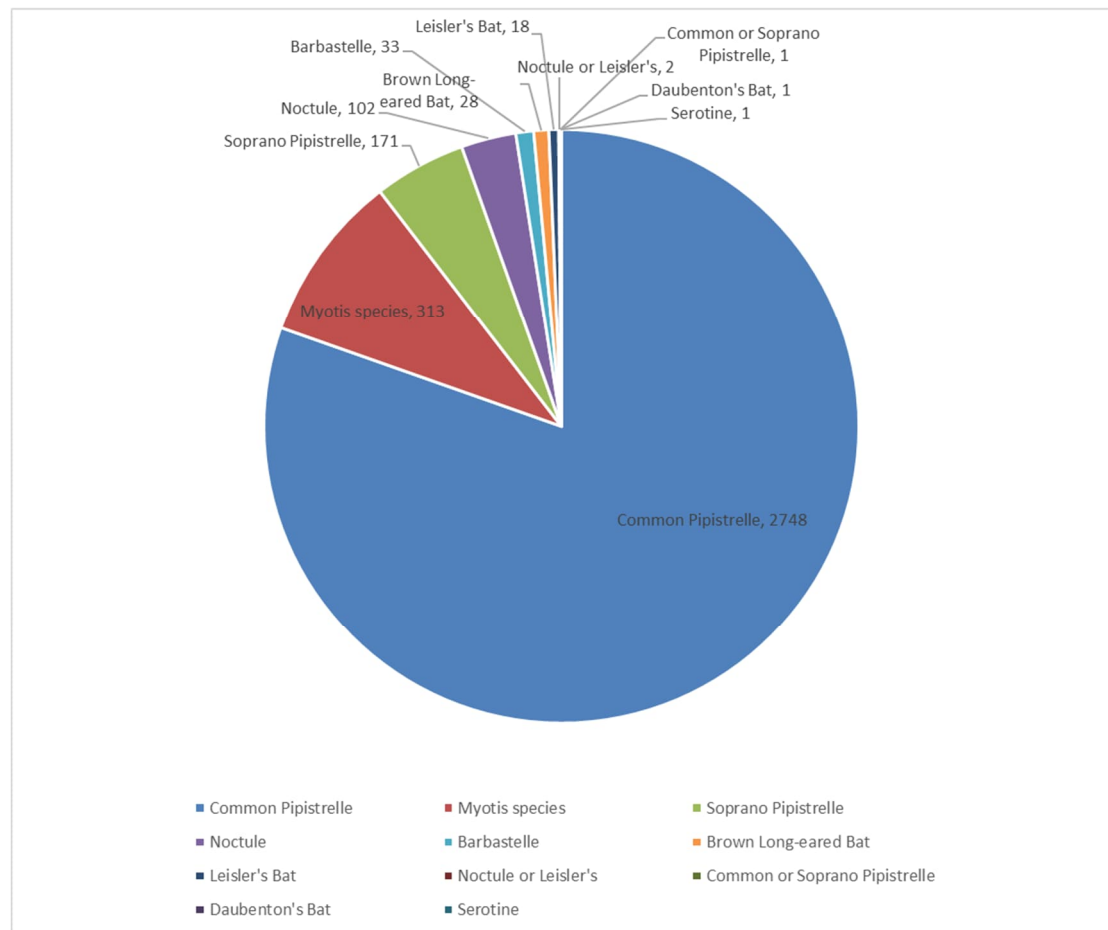
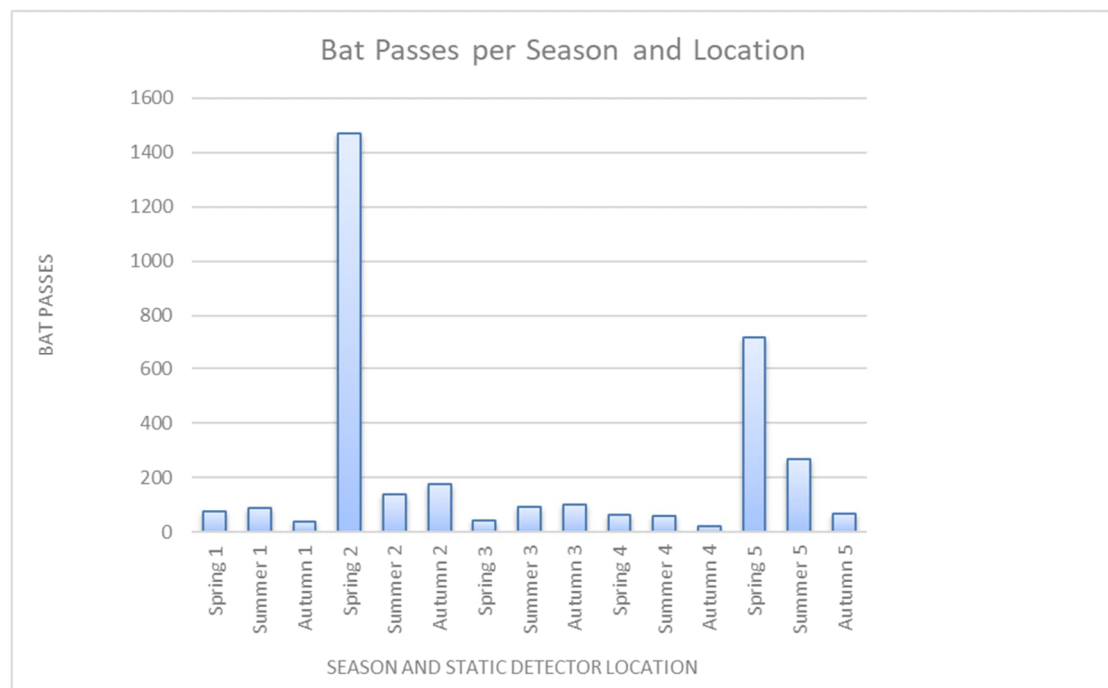


Chart 2: Number of Bat Passes per Season and Location



5. References

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Appendix A: Survey Results

Figures 1.1 to 1.6

Table A1. Bat Activity Survey Results

Key to weather

Beaufort wind force scale: 0 = No wind, 1 = Light air *smoke drifts*, 2 = Light Breeze *leaves rustle*, 3 = Gentle Breeze *small twigs move*, 4 = Mod Breeze *small branches move*, 5 = Fresh Breeze *small trees sway*, 6 = Strong Breeze *large branches move*, 7 = Mod Gale *whole trees in motion*

Rain Scale: 0-none, 1-drizzle 2-shower 3-rain 4-downpour 5-flood.

Oktas cloud scale: 0 = complete absence of cloud (fine), 1 = cloud amount of 1 eighth or less, but not zero (fine), 2 = 2/8 of sky covered (fine), 3 = 3/8 of sky covered (partly cloudy), 4 = 4/8 of sky covered (partly cloudy), 5 = 5/8 of sky covered (partly cloudy), 6 = 6/8 of sky covered (cloudy), 7 = 7/8 of sky covered (cloudy), 8 = sky completely covered (overcast).

SPRING 2023

Surveyors:	MC and NB	Temp C:	9 to 8
Site:	Transect 1	Wind:	2
Date:	15 th May 2023	Rain:	0
Sunset:	20:52	Cloud:	4
Start/end:	20:52/23:06		
Ref.	Timestamp	Species	
1	21:33	<i>Pipistrellus pipistrellus</i>	
2	21:39	<i>Pipistrellus pipistrellus</i>	
3	21:40	<i>Barbastella barbastellus</i>	
4	21:40	<i>Pipistrellus pipistrellus</i>	
5	21:41	<i>Pipistrellus pipistrellus</i>	
6	22:01	<i>Myotis spec.</i>	
7	22:11	<i>Myotis spec.</i>	
8	22:17	<i>Pipistrellus pygmaeus</i>	
9	22:51	<i>Pipistrellus pipistrellus</i>	
10	23:03	<i>Pipistrellus pipistrellus</i>	
11	23:05	<i>Pipistrellus pipistrellus</i>	

Surveyors:	MC and NB	Temp C:	7
Site:	Transect 2	Wind:	2
Date:	2 nd May 2023	Rain:	0
Sunset:	20:30	Cloud:	3
Start/end:	20:33/22:33		
Ref.	Timestamp	Species	
1	21:57	<i>Pipistrellus pipistrellus</i>	
2	22:02	<i>Pipistrellus pipistrellus</i>	
3	22:02	<i>Pipistrellus pipistrellus</i>	
4	22:03	<i>Pipistrellus pipistrellus</i>	
5	22:03	<i>Pipistrellus pipistrellus</i>	
6	22:03	<i>Pipistrellus pipistrellus</i>	
7	22:03	<i>Pipistrellus pipistrellus</i>	
8	22:21	<i>Pipistrellus pipistrellus</i>	

Surveyors:	MC and NB	Temp C:	10 to 8
Site:	Transect 3	Wind:	2
Date:	16 th May 2023	Rain:	0
Sunset:	20:54	Cloud:	4
Start/end:	20:47/22:58		
Ref.	Timestamp	Species	
1	22:06	<i>Pipistrellus pipistrellus</i>	
2	22:06	<i>Pipistrellus pipistrellus</i>	
3	22:07	<i>Pipistrellus pipistrellus</i>	
4	22:08	<i>Pipistrellus pipistrellus</i>	
5	22:08	<i>Pipistrellus pipistrellus</i>	
6	22:08	<i>Pipistrellus pipistrellus</i>	
7	22:08	<i>Pipistrellus pipistrellus</i>	
8	22:08	<i>Pipistrellus pipistrellus</i>	
9	22:08	<i>Pipistrellus pipistrellus</i>	
10	22:08	<i>Pipistrellus pipistrellus</i>	

11	22:09	<i>Pipistrellus pipistrellus</i>
12	22:09	<i>Pipistrellus pipistrellus</i>
13	22:27	<i>Pipistrellus pipistrellus</i>
14	22:27	<i>Pipistrellus pipistrellus</i>
15	22:27	<i>Pipistrellus pipistrellus</i>
16	22:29	<i>Pipistrellus pygmaeus</i>
17	22:31	<i>Pipistrellus pipistrellus</i>
18	22:42	<i>Pipistrellus pipistrellus</i>
19	22:44	<i>Pipistrellus pipistrellus</i>

Surveyors:	MC and NB	Temp C:	9 to 10
Site:	Transect 4	Wind:	5
Date:	4 th May 2023	Rain:	0 to 1
Sunset:	20:34	Cloud:	8
Start/end:	20:34/22:34		
Ref.	Timestamp	Species	
1	22:13	<i>Pipistrellus pipistrellus</i>	
2	22:20	<i>Pipistrellus pipistrellus</i>	

Surveyors:	MC and NB	Temp C:	6
Site:	Transect 5	Wind:	4
Date:	3 rd May 2023	Rain:	0
Sunset:	20:32	Cloud:	6
Start/end:	20:33/22:48		
Ref.	Timestamp	Species	
1	22:01	<i>Pipistrellus pipistrellus</i>	
2	22:01	<i>Pipistrellus pipistrellus</i>	
3	22:01	<i>Pipistrellus pipistrellus</i>	
4	22:03	<i>Pipistrellus pipistrellus</i>	
5	22:03	<i>Pipistrellus pipistrellus</i>	
6	22:04	<i>Pipistrellus pipistrellus</i>	
7	22:04	<i>Pipistrellus pipistrellus</i>	

8	22:05	<i>Pipistrellus pipistrellus</i>
9	22:08	<i>Pipistrellus pipistrellus</i>
10	22:10	<i>Pipistrellus pipistrellus</i>
11	22:10	<i>Pipistrellus pipistrellus</i>
12	22:10	<i>Pipistrellus pipistrellus</i>
13	22:10	<i>Pipistrellus pipistrellus</i>
14	22:11	<i>Pipistrellus pipistrellus</i>
15	22:12	<i>Pipistrellus pipistrellus</i>
16	22:12	<i>Pipistrellus pipistrellus</i>
17	22:13	<i>Pipistrellus pipistrellus</i>
18	22:15	<i>Pipistrellus pipistrellus</i>
19	22:16	<i>Pipistrellus pipistrellus</i>
20	22:16	<i>Pipistrellus pipistrellus</i>
21	22:18	<i>Pipistrellus pipistrellus</i>
22	22:18	<i>Pipistrellus pipistrellus</i>
23	22:18	<i>Pipistrellus pipistrellus</i>
24	22:18	<i>Pipistrellus pipistrellus</i>
25	22:19	<i>Pipistrellus pipistrellus</i>
26	22:19	<i>Pipistrellus pipistrellus</i>
27	22:19	<i>Pipistrellus pipistrellus</i>
28	22:19	<i>Pipistrellus pipistrellus</i>
29	22:20	<i>Pipistrellus pipistrellus</i>
30	22:20	<i>Pipistrellus pipistrellus</i>
31	22:20	<i>Pipistrellus pipistrellus</i>
32	22:20	<i>Pipistrellus pipistrellus</i>
33	22:20	<i>Pipistrellus pipistrellus</i>
34	22:20	<i>Pipistrellus pipistrellus</i>
35	22:21	<i>Pipistrellus pipistrellus</i>
36	22:21	<i>Pipistrellus pipistrellus</i>
37	22:21	<i>Pipistrellus pipistrellus</i>
38	22:21	<i>Pipistrellus pipistrellus</i>
39	22:21	<i>Pipistrellus pipistrellus</i>

40	22:22	<i>Pipistrellus pipistrellus</i>
41	22:22	<i>Pipistrellus pipistrellus</i>
42	22:22	<i>Pipistrellus pipistrellus</i>
43	22:22	<i>Pipistrellus pipistrellus</i>
44	22:22	<i>Pipistrellus pipistrellus</i>

SUMMER 2022

Surveyors:	AB and MC	Temp C:	21 to 17
Site:	Transect 1	Wind:	2
Date:	8 th August 2022	Rain:	0
Sunset:	20:42	Cloud:	0
Start/end:	20:48/23:27		
Ref.	Timestamp	Species	
1	21:31	<i>Pipistrellus pipistrellus</i>	
2	21:31	<i>Pipistrellus pipistrellus</i>	
3	21:32	<i>Pipistrellus pipistrellus</i>	
4	21:37	<i>Pipistrellus pipistrellus</i>	
5	21:37	<i>Pipistrellus pipistrellus</i>	
6	21:37	<i>Pipistrellus pipistrellus</i>	
7	21:38	<i>Pipistrellus pipistrellus</i>	
8	21:40	<i>Pipistrellus pipistrellus</i>	
9	21:40	<i>Pipistrellus pipistrellus</i>	
10	22:10	<i>Pipistrellus pipistrellus</i>	
11	22:11	<i>Pipistrellus pipistrellus</i>	
12	22:12	<i>Pipistrellus pipistrellus</i>	
13	22:12	<i>Pipistrellus pipistrellus</i>	
14	22:13	<i>Pipistrellus pipistrellus</i>	
15	22:26	<i>Pipistrellus pipistrellus</i>	
16	22:27	<i>Pipistrellus pipistrellus</i>	
17	22:38	<i>Pipistrellus pygmaeus</i>	
18	22:41	<i>Pipistrellus pipistrellus</i>	

19	22:49	<i>Myotis species</i>
20	22:54	<i>Pipistrellus pipistrellus</i>
21	23:06	<i>Pipistrellus pipistrellus</i>
22	23:11	<i>Pipistrellus pipistrellus</i>
23	23:11	<i>Pipistrellus pipistrellus</i>
24	23:11	<i>Pipistrellus pipistrellus</i>
25	23:12	<i>Pipistrellus pipistrellus</i>
26	23:12	<i>Pipistrellus pipistrellus</i>
27	23:16	<i>Pipistrellus pipistrellus</i>
28	23:25	<i>Pipistrellus pipistrellus</i>

Surveyors:	AB and MC	Temp C:	20 to 17
Site:	Transect 2	Wind:	3
Date:	9 th August 2022	Rain:	0
Sunset:	20:40	Cloud:	0
Start/end:	20:39/22:38		
Ref.	Timestamp	Species	
1	21:19	<i>Pipistrellus pipistrellus</i>	
2	21:29	<i>Pipistrellus pipistrellus</i>	
3	21:35	<i>Pipistrellus pipistrellus</i>	
4	21:36	<i>Pipistrellus pipistrellus</i>	
5	21:37	<i>Pipistrellus pipistrellus</i>	
6	21:58	<i>Pipistrellus pipistrellus</i>	
7	22:26	<i>Pipistrellus pipistrellus</i>	
8	22:26	<i>Pipistrellus pipistrellus</i>	
9	22:26	<i>Pipistrellus pipistrellus</i>	
10	22:27	<i>Pipistrellus pipistrellus</i>	

Surveyors:	AB and MC	Temp C:	20 to 16
Site:	Transect 3	Wind:	3
Date:	10 th August 2022	Rain:	0
Sunset:	20:38	Cloud:	0
Start/end:	20:37/22:54		
Ref.	Timestamp	Species	
1	21:23	<i>Pipistrellus pipistrellus</i>	
2	21:25	<i>Pipistrellus pipistrellus</i>	
3	21:25	<i>Pipistrellus pipistrellus</i>	
4	21:27	<i>Pipistrellus pipistrellus</i>	
5	21:28	<i>Pipistrellus pipistrellus</i>	
6	21:28	<i>Pipistrellus pipistrellus</i>	
7	21:28	<i>Pipistrellus pipistrellus</i>	
8	21:29	<i>Pipistrellus pipistrellus</i>	
9	21:43	<i>Pipistrellus pipistrellus</i>	
10	21:44	<i>Pipistrellus pipistrellus</i>	
11	21:44	<i>Pipistrellus pipistrellus</i>	
12	21:44	<i>Pipistrellus pipistrellus</i>	
13	21:45	<i>Pipistrellus pipistrellus</i>	
14	21:52	<i>Pipistrellus pipistrellus</i>	
15	21:53	<i>Pipistrellus pipistrellus</i>	
16	22:07	<i>Pipistrellus pipistrellus</i>	
17	22:07	<i>Pipistrellus pipistrellus</i>	
18	22:07	<i>Pipistrellus pipistrellus</i>	
19	22:07	<i>Pipistrellus pipistrellus</i>	
20	22:08	<i>Pipistrellus pipistrellus</i>	
21	22:08	<i>Pipistrellus pipistrellus</i>	
22	22:08	<i>Pipistrellus pipistrellus</i>	
23	22:09	<i>Pipistrellus pipistrellus</i>	
24	22:12	<i>Pipistrellus pipistrellus</i>	
25	22:16	<i>Pipistrellus pipistrellus</i>	
26	22:16	<i>Pipistrellus pipistrellus</i>	

27 22:23 *Myotis* species

Surveyors: AB and MC Temp C: 22 to 18

Site: Transect 4 Wind: 3

Date: 11th August 2022 Rain: 0

Sunset: 20:36 Cloud: 0

Start/end: 20:35/22:36

Ref.	Timestamp	Species
1	20:54	<i>Pipistrellus pipistrellus</i>
2	21:33	<i>Pipistrellus pipistrellus</i>
3	21:40	<i>Pipistrellus pipistrellus</i>
4	21:40	<i>Pipistrellus pipistrellus</i>
5	21:41	<i>Pipistrellus pipistrellus</i>
6	21:41	<i>Pipistrellus pipistrellus</i>
7	21:41	<i>Pipistrellus pipistrellus</i>
8	21:41	<i>Pipistrellus pipistrellus</i>
9	21:42	<i>Pipistrellus pipistrellus</i>
10	21:42	<i>Pipistrellus pipistrellus</i>
11	21:42	<i>Pipistrellus pipistrellus</i>
12	21:43	<i>Pipistrellus pipistrellus</i>
13	21:43	<i>Pipistrellus pipistrellus</i>
14	21:44	<i>Pipistrellus pipistrellus</i>
15	21:44	<i>Pipistrellus pipistrellus</i>
16	21:45	<i>Pipistrellus pipistrellus</i>
17	21:45	<i>Pipistrellus pipistrellus</i>
18	21:45	<i>Pipistrellus pipistrellus</i>
19	21:45	<i>Pipistrellus pipistrellus</i>
20	21:45	<i>Pipistrellus pipistrellus</i>
21	21:46	<i>Pipistrellus pipistrellus</i>
22	21:46	<i>Pipistrellus pipistrellus</i>
23	21:46	<i>Pipistrellus pipistrellus</i>
24	21:46	<i>Pipistrellus pipistrellus</i>

25	21:47	<i>Pipistrellus pipistrellus</i>
26	21:47	<i>Pipistrellus pipistrellus</i>
27	21:48	<i>Pipistrellus pipistrellus</i>
28	21:48	<i>Pipistrellus pipistrellus</i>
29	21:48	<i>Pipistrellus pipistrellus</i>
30	21:49	<i>Pipistrellus pipistrellus</i>
31	22:11	<i>Pipistrellus pipistrellus</i>
32	22:12	<i>Pipistrellus pipistrellus</i>
33	22:13	<i>Pipistrellus pipistrellus</i>
34	22:13	<i>Pipistrellus pipistrellus</i>
35	22:13	<i>Pipistrellus pipistrellus</i>
36	22:15	<i>Pipistrellus pipistrellus</i>
37	22:15	<i>Pipistrellus pipistrellus</i>
38	22:15	<i>Pipistrellus pipistrellus</i>
39	22:15	<i>Pipistrellus pipistrellus</i>
40	22:16	<i>Pipistrellus pipistrellus</i>
41	22:16	<i>Pipistrellus pipistrellus</i>
42	22:16	<i>Pipistrellus pipistrellus</i>
43	22:16	<i>Pipistrellus pipistrellus</i>
44	22:16	<i>Pipistrellus pipistrellus</i>
45	22:17	<i>Pipistrellus pipistrellus</i>
46	22:17	<i>Pipistrellus pipistrellus</i>
47	22:17	<i>Pipistrellus pipistrellus</i>
48	22:17	<i>Pipistrellus pipistrellus</i>
49	22:17	<i>Pipistrellus pipistrellus</i>
50	22:17	<i>Pipistrellus pipistrellus</i>
51	22:17	<i>Pipistrellus pipistrellus</i>
52	22:18	<i>Pipistrellus pipistrellus</i>
53	22:18	<i>Pipistrellus pipistrellus</i>
54	22:18	<i>Pipistrellus pipistrellus</i>
55	22:18	<i>Pipistrellus pipistrellus</i>
56	22:19	<i>Pipistrellus pipistrellus</i>

57	22:19	<i>Pipistrellus pipistrellus</i>
58	22:19	<i>Pipistrellus pipistrellus</i>
59	22:24	<i>Pipistrellus pipistrellus</i>
60	22:24	<i>Pipistrellus pipistrellus</i>
61	22:24	<i>Pipistrellus pipistrellus</i>
62	22:26	<i>Pipistrellus pipistrellus</i>
63	22:26	<i>Pipistrellus pipistrellus</i>
64	22:28	<i>Pipistrellus pipistrellus</i>
65	22:29	<i>Pipistrellus pipistrellus</i>
66	22:29	<i>Pipistrellus pipistrellus</i>
67	22:29	<i>Pipistrellus pipistrellus</i>
68	22:34	<i>Pipistrellus pipistrellus</i>
69	22:34	<i>Pipistrellus pipistrellus</i>
70	22:35	<i>Pipistrellus pipistrellus</i>
71	22:36	<i>Pipistrellus pipistrellus</i>
72	22:36	<i>Pipistrellus pipistrellus</i>

Surveyors:	AB and MC	Temp C:	21 to 17
Site:	Transect 5	Wind:	4
Date:	12 th August 2022	Rain:	0
Sunset:	20:34	Cloud:	1
Start/end:	20:33/22:46		
Ref.	Timestamp	Species	
1	21:24	<i>Pipistrellus pipistrellus</i>	
2	21:39	<i>Pipistrellus pipistrellus</i>	
3	21:39	<i>Pipistrellus pipistrellus</i>	
4	21:41	<i>Pipistrellus pipistrellus</i>	
5	21:46	<i>Pipistrellus pipistrellus</i>	
6	22:06	<i>Pipistrellus pipistrellus</i>	
7	22:08	<i>Pipistrellus pipistrellus</i>	
8	22:09	<i>Pipistrellus pipistrellus</i>	

9	22:09	<i>Pipistrellus pipistrellus</i>
10	22:10	<i>Pipistrellus pipistrellus</i>
11	22:15	<i>Nyctalus noctula</i>

AUTUMN 2022

Surveyors:	AB and MC	Temp C:	11 to 10
Site:	Transect 1	Wind:	2
Date:	26 th September 2022	Rain:	0 to 1
Sunset:	18:50	Cloud:	3
Start/end:	18:58/21:15		
Ref.	Timestamp	Species	
1	19:13	<i>Pipistrellus pipistrellus</i>	
2	19:13	<i>Pipistrellus pipistrellus</i>	
3	19:21	<i>Pipistrellus pipistrellus</i>	
4	19:50	<i>Myotis</i> species	
5	20:09	<i>Pipistrellus</i> species	
6	21:10	<i>Pipistrellus pipistrellus</i>	
7	21:10	<i>Pipistrellus pipistrellus</i>	

Surveyors:	AB and MC	Temp C:	13 to 12
Site:	Transect 2	Wind:	5
Date:	29 th September 2022	Rain:	0
Sunset:	18:43	Cloud:	2
Start/end:	18:47/20:34		
Ref.	Timestamp	Species	
1	18:51	<i>Nyctalus noctula</i>	
2	18:51	<i>Nyctalus noctula</i>	
3	18:51	<i>Nyctalus noctula</i>	
4	18:51	<i>Nyctalus noctula</i>	
5	19:53	<i>Nyctalus noctula</i>	
6	19:55	<i>Pipistrellus</i> species	
7	19:55	<i>Pipistrellus</i> species	

8	19:55	<i>Pipistrellus</i> species
9	19:56	<i>Pipistrellus</i> species
10	20:03	<i>Pipistrellus pipistrellus</i>
11	20:03	<i>Nyctalus noctula</i>
12	20:03	<i>Nyctalus noctula</i>

Surveyors:	AB and MC	Temp C:	15 to 13
Site:	Transect 3	Wind:	5
Date:	17 th October 2022	Rain:	0
Sunset:	18:01	Cloud:	0
Start/end:	18:00/20:21		

Ref.	Timestamp	Species
1	19:19	<i>Pipistrellus pipistrellus</i>
2	19:19	<i>Pipistrellus pipistrellus</i>
3	19:19	<i>Pipistrellus pipistrellus</i>
4	19:19	<i>Pipistrellus pipistrellus</i>
5	19:19	<i>Pipistrellus pipistrellus</i>
6	19:24	<i>Pipistrellus pipistrellus</i>
7	19:31	<i>Pipistrellus pipistrellus</i>
8	19:36	<i>Pipistrellus pipistrellus</i>
9	19:38	<i>Pipistrellus</i> species
10	19:39	<i>Pipistrellus</i> species
11	19:39	<i>Pipistrellus pipistrellus</i>
12	19:40	<i>Barbastella barbastellus</i>
13	19:55	<i>Pipistrellus</i> species
14	19:56	<i>Pipistrellus</i> species
15	19:56	<i>Pipistrellus</i> species
16	20:03	<i>Pipistrellus</i> species
17	20:04	<i>Pipistrellus</i> species
18	20:05	<i>Pipistrellus</i> species
19	20:18	<i>Myotis</i> species
20	20:18	<i>Myotis</i> species

Surveyors:	AB and MC	Temp C:	15 to 13
Site:	Transect 4	Wind:	2
Date:	13 th September 2022	Rain:	0
Sunset:	19:21	Cloud:	4
Start/end:	19:18/21:20		
Ref.	Timestamp	Species	
1	19:51	<i>Pipistrellus pipistrellus</i>	
2	19:53	<i>Pipistrellus pipistrellus</i>	
3	19:54	<i>Pipistrellus pipistrellus</i>	
4	19:54	<i>Pipistrellus pipistrellus</i>	
5	19:54	<i>Pipistrellus pipistrellus</i>	
6	19:54	<i>Pipistrellus pipistrellus</i>	
7	19:55	<i>Pipistrellus pipistrellus</i>	
8	19:55	<i>Pipistrellus pipistrellus</i>	
9	19:55	<i>Pipistrellus pipistrellus</i>	
10	19:55	<i>Pipistrellus pipistrellus</i>	
11	19:55	<i>Pipistrellus pipistrellus</i>	
12	19:55	<i>Pipistrellus pipistrellus</i>	
13	19:56	<i>Pipistrellus pipistrellus</i>	
14	19:56	<i>Pipistrellus pipistrellus</i>	
15	19:56	<i>Pipistrellus pipistrellus</i>	
16	19:57	<i>Pipistrellus pipistrellus</i>	
17	19:57	<i>Pipistrellus pipistrellus</i>	
18	19:57	<i>Pipistrellus pipistrellus</i>	
19	19:57	<i>Pipistrellus pipistrellus</i>	
20	19:57	<i>Pipistrellus pipistrellus</i>	
21	19:57	<i>Pipistrellus pipistrellus</i>	
22	19:58	<i>Pipistrellus pipistrellus</i>	
23	20:13	<i>Pipistrellus pipistrellus</i>	
24	20:14	<i>Pipistrellus pipistrellus</i>	
25	20:14	<i>Pipistrellus pipistrellus</i>	

26	20:14	<i>Barbastella barbastellus</i>
27	20:14	<i>Pipistrellus pipistrellus</i>
28	20:14	<i>Pipistrellus pipistrellus</i>
29	20:18	<i>Pipistrellus pipistrellus</i>
30	20:18	<i>Pipistrellus pipistrellus</i>
31	20:19	<i>Pipistrellus pipistrellus</i>
32	20:19	<i>Pipistrellus pipistrellus</i>
33	20:19	<i>Pipistrellus pipistrellus</i>
34	20:20	<i>Pipistrellus pipistrellus</i>
35	20:20	<i>Pipistrellus pipistrellus</i>
36	20:20	<i>Pipistrellus pipistrellus</i>
37	20:21	<i>Pipistrellus pipistrellus</i>
38	20:25	<i>Pipistrellus pipistrellus</i>
39	20:37	<i>Myotis species</i>
40	20:38	<i>Pipistrellus pipistrellus</i>
41	20:44	<i>Pipistrellus pipistrellus</i>
42	20:45	<i>Pipistrellus pipistrellus</i>
43	20:46	<i>Pipistrellus pipistrellus</i>
45	20:51	<i>Pipistrellus pipistrellus</i>
46	20:53	<i>Pipistrellus pipistrellus</i>
47	20:56	<i>Barbastella barbastellus</i>
48	20:57	<i>Pipistrellus pipistrellus</i>
49	20:58	<i>Pipistrellus pipistrellus</i>
50	20:58	<i>Pipistrellus pipistrellus</i>
51	20:58	<i>Pipistrellus pipistrellus</i>
52	20:59	<i>Pipistrellus pipistrellus</i>
53	21:02	<i>Barbastella barbastellus</i>
54	21:04	<i>Pipistrellus pipistrellus</i>
55	21:04	<i>Pipistrellus pipistrellus</i>
56	21:05	<i>Myotis species</i>
57	21:05	<i>Pipistrellus pipistrellus</i>
58	21:05	<i>Pipistrellus pipistrellus</i>

59	21:05	<i>Pipistrellus pipistrellus</i>
60	21:05	<i>Pipistrellus pipistrellus</i>
61	21:06	<i>Pipistrellus pipistrellus</i>
62	21:06	<i>Barbastella barbastellus</i>
63	21:07	<i>Pipistrellus</i> species
64	21:08	<i>Pipistrellus pipistrellus</i>
65	21:09	<i>Pipistrellus pipistrellus</i>
66	21:09	<i>Pipistrellus pipistrellus</i>
67	21:09	<i>Pipistrellus pipistrellus</i>
68	21:09	<i>Pipistrellus pipistrellus</i>
69	21:10	<i>Pipistrellus pipistrellus</i>
70	21:10	<i>Pipistrellus pipistrellus</i>
71	21:11	<i>Pipistrellus</i> species
72	21:12	<i>Pipistrellus</i> species
73	21:12	<i>Pipistrellus</i> species
74	21:13	<i>Pipistrellus</i> species
75	21:13	<i>Pipistrellus</i> species
76	21:13	<i>Barbastella barbastellus</i>
77	21:14	<i>Pipistrellus</i> species
78	21:14	<i>Pipistrellus pipistrellus</i>
79	21:14	<i>Pipistrellus pipistrellus</i>
80	21:15	<i>Pipistrellus pipistrellus</i>
81	21:15	<i>Pipistrellus pipistrellus</i>
82	21:15	<i>Pipistrellus pipistrellus</i>
83	21:19	<i>Plecotus auritus</i>

Surveyors:	AB and MC	Temp C:	15 to 14
Site:	Transect 5	Wind:	2
Date:	14 th September 2022	Rain:	0
Sunset:	19:19	Cloud:	5
Start/end:	19:26/21:34		
Ref.	Timestamp	Species	

1	19:37	<i>Nyctalus noctula</i>
2	19:37	<i>Nyctalus noctula</i>
3	19:37	<i>Nyctalus noctula</i>
4	19:37	<i>Nyctalus noctula</i>
5	19:53	<i>Myotis species</i>
6	19:57	<i>Pipistrellus pipistrellus</i>
7	19:57	<i>Pipistrellus pygmaeus</i>
8	19:58	<i>Nyctalus leisleri</i>
9	19:58	<i>Pipistrellus pipistrellus</i>
10	19:58	<i>Pipistrellus pygmaeus</i>
11	19:59	<i>Pipistrellus pygmaeus</i>
12	20:00	<i>Pipistrellus pipistrellus</i>
13	20:01	<i>Pipistrellus pipistrellus</i>
14	20:01	<i>Pipistrellus pipistrellus</i>
15	20:01	<i>Pipistrellus pipistrellus</i>
16	20:01	<i>Pipistrellus pipistrellus</i>
17	20:01	<i>Pipistrellus pygmaeus</i>
18	20:07	<i>Pipistrellus pipistrellus</i>
19	20:08	<i>Pipistrellus pipistrellus</i>
20	20:08	<i>Pipistrellus pipistrellus</i>
21	20:08	<i>Pipistrellus pipistrellus</i>
22	20:08	<i>Pipistrellus pipistrellus</i>
23	20:10	<i>Pipistrellus pipistrellus</i>
24	20:10	<i>Pipistrellus pipistrellus</i>
25	20:11	<i>Pipistrellus pipistrellus</i>
26	20:11	<i>Pipistrellus pipistrellus</i>
27	20:13	<i>Pipistrellus pipistrellus</i>
28	20:13	<i>Pipistrellus pipistrellus</i>
29	20:19	<i>Pipistrellus pipistrellus</i>
30	20:33	<i>Pipistrellus pipistrellus</i>
31	20:34	<i>Pipistrellus pipistrellus</i>
32	20:34	<i>Pipistrellus pipistrellus</i>

33	20:34	<i>Pipistrellus pipistrellus</i>
34	20:35	<i>Pipistrellus pipistrellus</i>
35	20:36	<i>Pipistrellus pipistrellus</i>
36	20:36	<i>Pipistrellus pipistrellus</i>
37	20:36	<i>Pipistrellus pipistrellus</i>
38	20:36	<i>Pipistrellus pipistrellus</i>
39	20:37	<i>Pipistrellus pipistrellus</i>
40	20:37	<i>Pipistrellus pipistrellus</i>
41	20:38	<i>Pipistrellus pipistrellus</i>
42	20:39	<i>Pipistrellus pipistrellus</i>
43	20:39	<i>Pipistrellus pipistrellus</i>
45	20:39	<i>Pipistrellus pipistrellus</i>
46	20:39	<i>Pipistrellus pipistrellus</i>
47	20:40	<i>Pipistrellus pipistrellus</i>
48	20:40	<i>Pipistrellus pipistrellus</i>
49	20:40	<i>Pipistrellus pipistrellus</i>
50	20:40	<i>Pipistrellus pipistrellus</i>
51	20:41	<i>Pipistrellus pipistrellus</i>
52	20:41	<i>Pipistrellus pipistrellus</i>
53	20:41	<i>Myotis species</i>
54	20:41	<i>Pipistrellus pipistrellus</i>
55	20:42	<i>Pipistrellus pipistrellus</i>
56	20:42	<i>Pipistrellus pipistrellus</i>
57	20:42	<i>Pipistrellus pipistrellus</i>
58	20:43	<i>Pipistrellus pipistrellus</i>
59	20:43	<i>Pipistrellus pipistrellus</i>
60	20:43	<i>Pipistrellus pipistrellus</i>
61	20:44	<i>Pipistrellus species</i>
62	20:44	<i>Pipistrellus pipistrellus</i>
63	20:44	<i>Pipistrellus pipistrellus</i>
64	20:45	<i>Pipistrellus pipistrellus</i>
65	20:45	<i>Pipistrellus pipistrellus</i>

66	20:45	<i>Pipistrellus pipistrellus</i>
67	20:45	<i>Pipistrellus pipistrellus</i>
68	20:45	<i>Pipistrellus pipistrellus</i>
69	20:45	<i>Pipistrellus pipistrellus</i>
70	20:45	<i>Pipistrellus pipistrellus</i>
71	20:46	<i>Pipistrellus pipistrellus</i>
72	20:46	<i>Pipistrellus pipistrellus</i>
73	20:46	<i>Pipistrellus pipistrellus</i>
74	20:46	<i>Pipistrellus pipistrellus</i>
75	20:46	<i>Pipistrellus pipistrellus</i>
76	20:47	<i>Pipistrellus pipistrellus</i>
77	20:47	<i>Pipistrellus pipistrellus</i>
78	20:47	<i>Pipistrellus pipistrellus</i>
79	20:47	<i>Pipistrellus pipistrellus</i>
80	20:47	<i>Pipistrellus pipistrellus</i>
81	20:48	<i>Pipistrellus pipistrellus</i>
82	20:49	<i>Pipistrellus pipistrellus</i>
83	20:49	<i>Pipistrellus pipistrellus</i>
84	20:49	<i>Pipistrellus pipistrellus</i>
85	20:50	<i>Pipistrellus pipistrellus</i>
86	20:50	<i>Pipistrellus pipistrellus</i>
87	20:50	<i>Pipistrellus pipistrellus</i>
88	20:50	<i>Pipistrellus pipistrellus</i>
89	20:51	<i>Pipistrellus pipistrellus</i>
90	20:52	<i>Pipistrellus pipistrellus</i>
91	20:52	<i>Pipistrellus pipistrellus</i>
92	20:53	<i>Pipistrellus pipistrellus</i>
93	20:53	<i>Pipistrellus pipistrellus</i>
94	20:53	<i>Pipistrellus pipistrellus</i>
95	20:53	<i>Pipistrellus pipistrellus</i>
96	20:53	<i>Pipistrellus pipistrellus</i>
97	20:54	<i>Pipistrellus pipistrellus</i>

98	20:56	<i>Pipistrellus pygmaeus</i>
99	21:06	<i>Myotis species</i>
100	21:09	<i>Pipistrellus pipistrellus</i>
101	21:09	<i>Pipistrellus pipistrellus</i>
102	21:10	<i>Pipistrellus pipistrellus</i>
103	21:10	<i>Pipistrellus pipistrellus</i>
104	21:10	<i>Pipistrellus pipistrellus</i>
105	21:11	<i>Pipistrellus pipistrellus</i>
106	21:11	<i>Pipistrellus pipistrellus</i>
107	21:15	<i>Pipistrellus pipistrellus</i>
108	21:15	<i>Pipistrellus pipistrellus</i>
109	21:16	<i>Pipistrellus pipistrellus</i>
110	21:16	<i>Pipistrellus pipistrellus</i>
111	21:16	<i>Pipistrellus pipistrellus</i>
112	21:17	<i>Myotis species</i>
113	21:18	<i>Pipistrellus pipistrellus</i>
114	21:18	<i>Pipistrellus pipistrellus</i>
115	21:27	<i>Pipistrellus pipistrellus</i>
116	21:28	<i>Pipistrellus pipistrellus</i>
117	21:28	<i>Pipistrellus pipistrellus</i>
118	21:29	<i>Pipistrellus pipistrellus</i>
119	21:30	<i>Pipistrellus pipistrellus</i>

Table A2. Static Detector Results

Season	Location	Dates	PIPI	PIPY	PISP	NYNO	NYLE	NYSP	MYSP	MYDA	EPSE	BABA	PLAU	Total	Nights	hrs/nt	BAI per hr	Activity Level
Spring	2	03/05/2023-06/05/2023	1275	1	-	40	-	-	147	-	-	-	8	1471	4	9.00	40.86	High Activity
Spring	5	09/05/2023-13/05/2023	698	3	-	-	-	-	19	-	-	-	-	720	5	9.00	16.00	High Activity
Summer	5	08/08/2022-12/08/2022	228	1	-	2	7	-	15	-	-	8	5	266	5	9.00	5.91	High Activity
Summer	2	08/08/2022-12/08/2022	120	2	-	6	1	1	7	-	-	2	-	139	5	9.00	3.09	Moderate-High Activity
Autumn	2	13/09/2022-17/09/2022	40	107	-	3	-	-	19	-	-	2	6	177	5	12.50	2.83	Moderate-High Activity
Summer	3	08/08/2022-12/08/2022	71	2	-	15	-	-	2	-	-	-	1	91	5	9.00	2.02	Moderate-High Activity
Summer	1	08/08/2022-12/08/2022	52	13	-	5	2	1	11	-	-	1	3	88	5	9.00	1.96	Moderate Activity
Spring	1	05/05/2023-09/05/2023	59	7	1	4	1	-	2	-	-	1	1	76	5	9.00	1.69	Moderate Activity
Spring	4	09/05/2023-13/05/2023	51	-	-	-	-	-	10	-	-	1	-	62	5	9.00	1.38	Moderate Activity
Autumn	3	21/09/2022-26/09/2022	54	1	-	-	1	-	25	1	1	15	1	99	6	12.00	1.38	Moderate Activity
Summer	4	08/08/2022-12/08/2022	53	-	-	1	-	-	4	-	-	1	2	61	5	9.00	1.36	Low-Moderate Activity

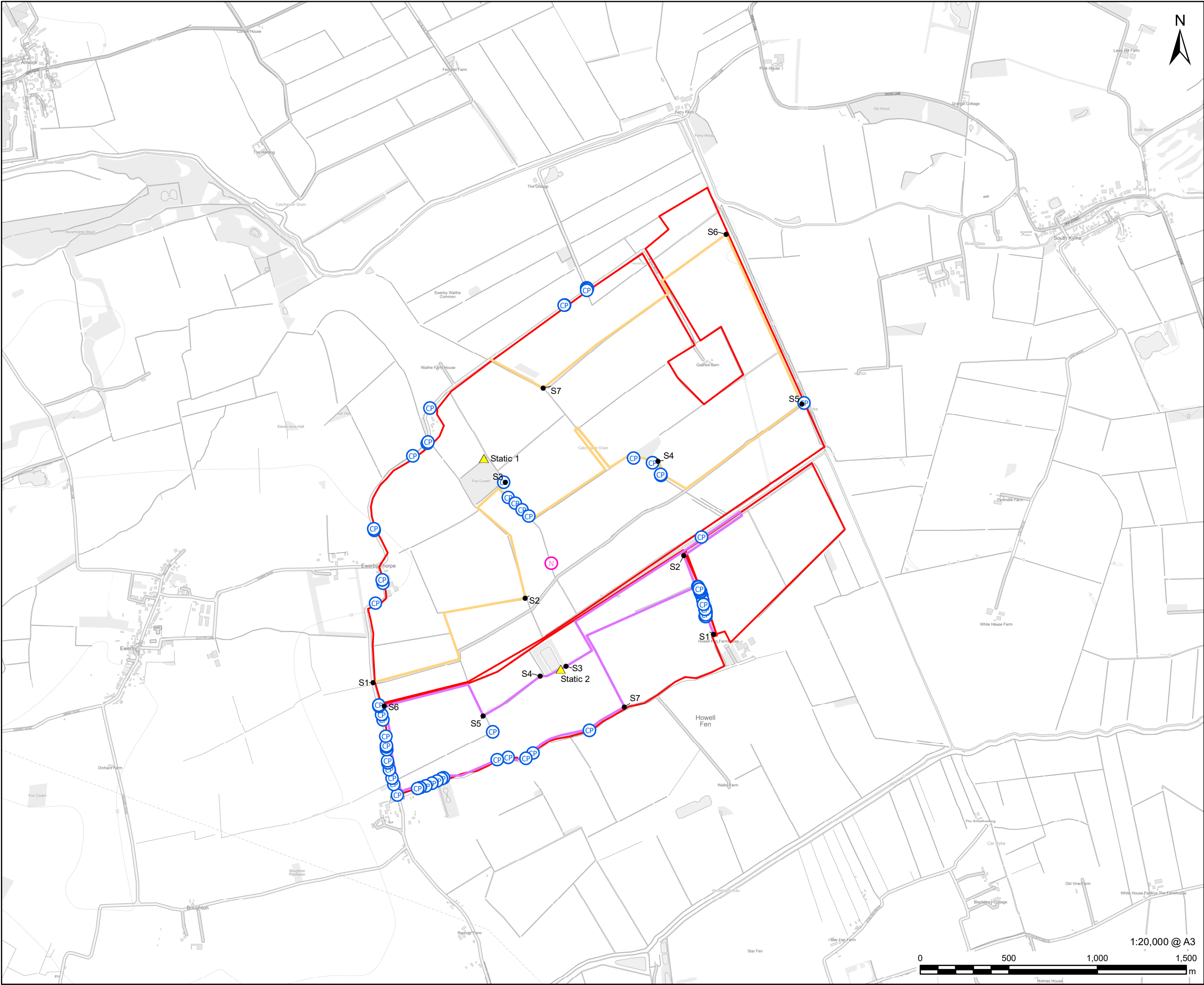
Season	Location	Dates	PIPI	PIPY	PISP	NYNO	NYLE	NYSP	MYSP	MYDA	EPSE	BABA	PLAU	Total	Nights	hrs/nt	BAI per hr	Activity Level
Autumn	5	21/09/2022- 26/09/2022	3	33	-	-	2	-	28	-	-	-	-	66	6	12.00	0.92	Low-Moderate Activity
Spring	3	05/05/2023- 09/05/2023	38	-	-	1	-	-	-	-	-	1	1	41	5	9.00	0.91	Low Activity
Autumn	1	13/09/2022- 17/09/2022	3	1	-	23	4	-	8	-	-	-	-	39	5	12.50	0.62	Low Activity
Autumn	4	21/09/2022- 26/09/2022	3	-	-	2	-	-	16	-	-	1	-	22	6	12.00	0.31	Low Activity
TOTALS			2748	171	1	102	18	2	313	1	1	33	28	3418	77			

Species abbreviations: PIPI - Common Pipistrelle, PIPY - Soprano Pipistrelle, PINA – Nathusius' Pipistrelle, PISP – Common or Soprano Pipistrelle, NYNO - Noctule, NYLE –, NYSP - Noctule or Leisler's, MYSP - Myotis species, EPSE – Serotine, BABA – Barbastelle, PLAU - Brown Long-eared.

Table A3. Static Weather Data

Month	Date	Minimum temperature (°C)	Maximum Temperature (°C)	Minimum Wind (mph)	Maximum Wind (mph)	Rain*
Spring	03/05/2023	6	13	6	16	0
	04/05/2023	6	14	5	24	1
	05/05/2023	9	19	3	14	1
	06/05/2023	8	16	3	14	2
	07/05/2023	13	20	0	10	0
	08/05/2023	12	15	8	16	2
	09/05/2023	12	18	5	12	3
	10/05/2023	8	17	5	16	1
Summer	08/08/2022	13	26	0	14	0
	09/08/2022	15	27	0	10	0
	10/08/2022	14	27	0	10	0
	11/08/2022	13	30	0	12	0
	12/08/2022	16	30	6	16	0
Autumn	13/09/2022	10	18	1	9	0
	14/09/2022	11	17	0	13	0
	26/09/2022	8	13	3	17	1
	28/09/2022	6	15	5	14	1
	29/09/2022	9	15	2	14	1
	17/10/2022	11	18	7	20	0

*Rain Scale: 0-none, 1-drizzle 2-shower 3-rain 4-downpour 5-flood.



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LEGEND

- Site boundary
- Transect 4
- Transect 5
- Static Detector Location
- Transect Stopping Point

Bat Species Records

- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Noctule (*Nyctalus noctula*)

PAGE LAYOUT

NOTES

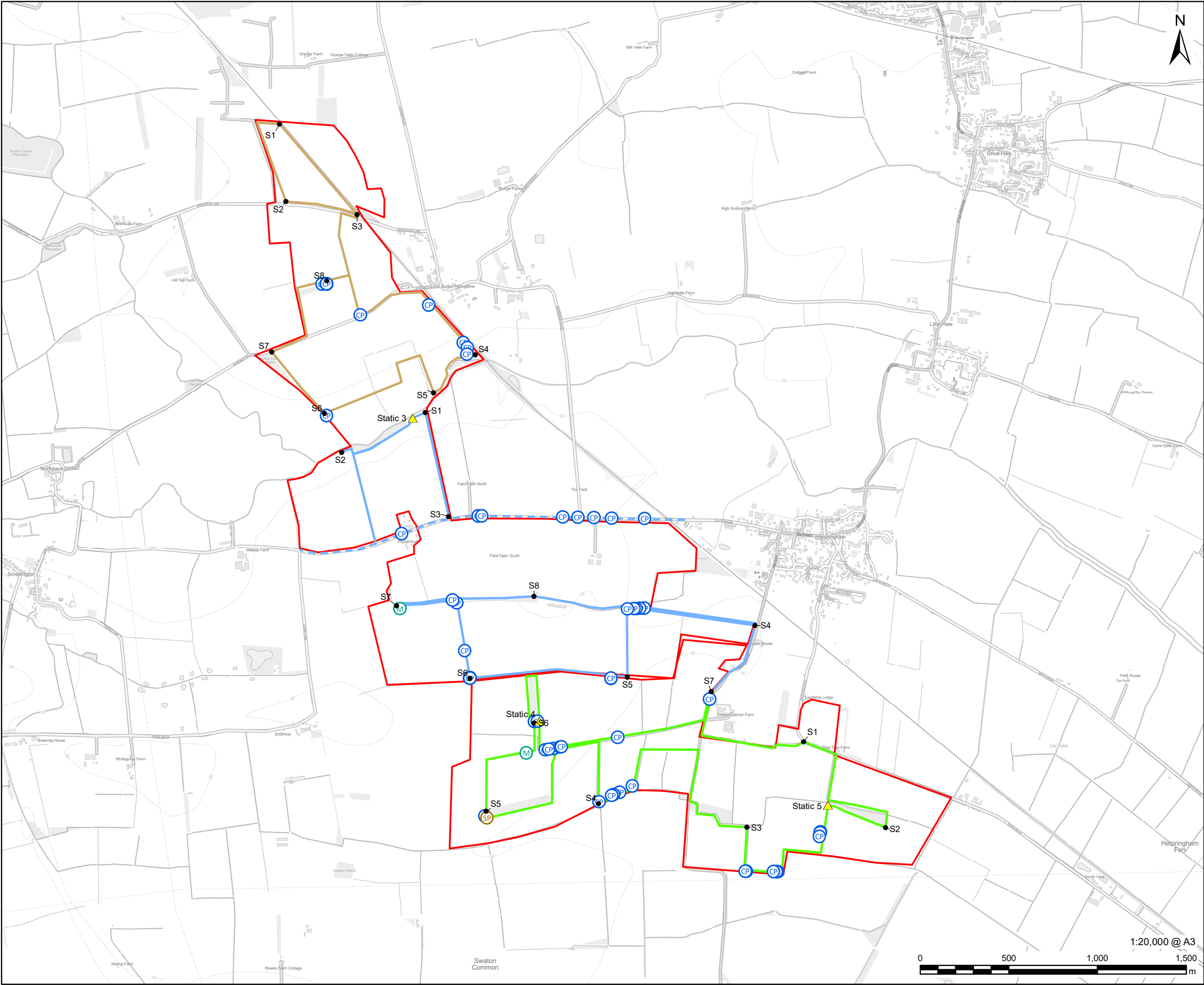
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ISSUE PURPOSE
FOR INFORMATION

PROJECT NUMBER
60644715

FIGURE TITLE
BAT ACTIVITY SURVEY; TRANSECT 4 AND 5, SUMMER 2022

FIGURE NUMBER
FIGURE 1.1



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LEGEND
Site boundary
Transect 1
Transect 2
Transect 3
Transect 3 (Driven)
Static Detector Location
Transect Stopping Point

Bat Species Records
Common Pipistrelle (*Pipistrellus pipistrellus*)
Myotis spec.
Soprano Pipistrelle (*Pipistrellus pygmaeus*)

PAGE LAYOUT

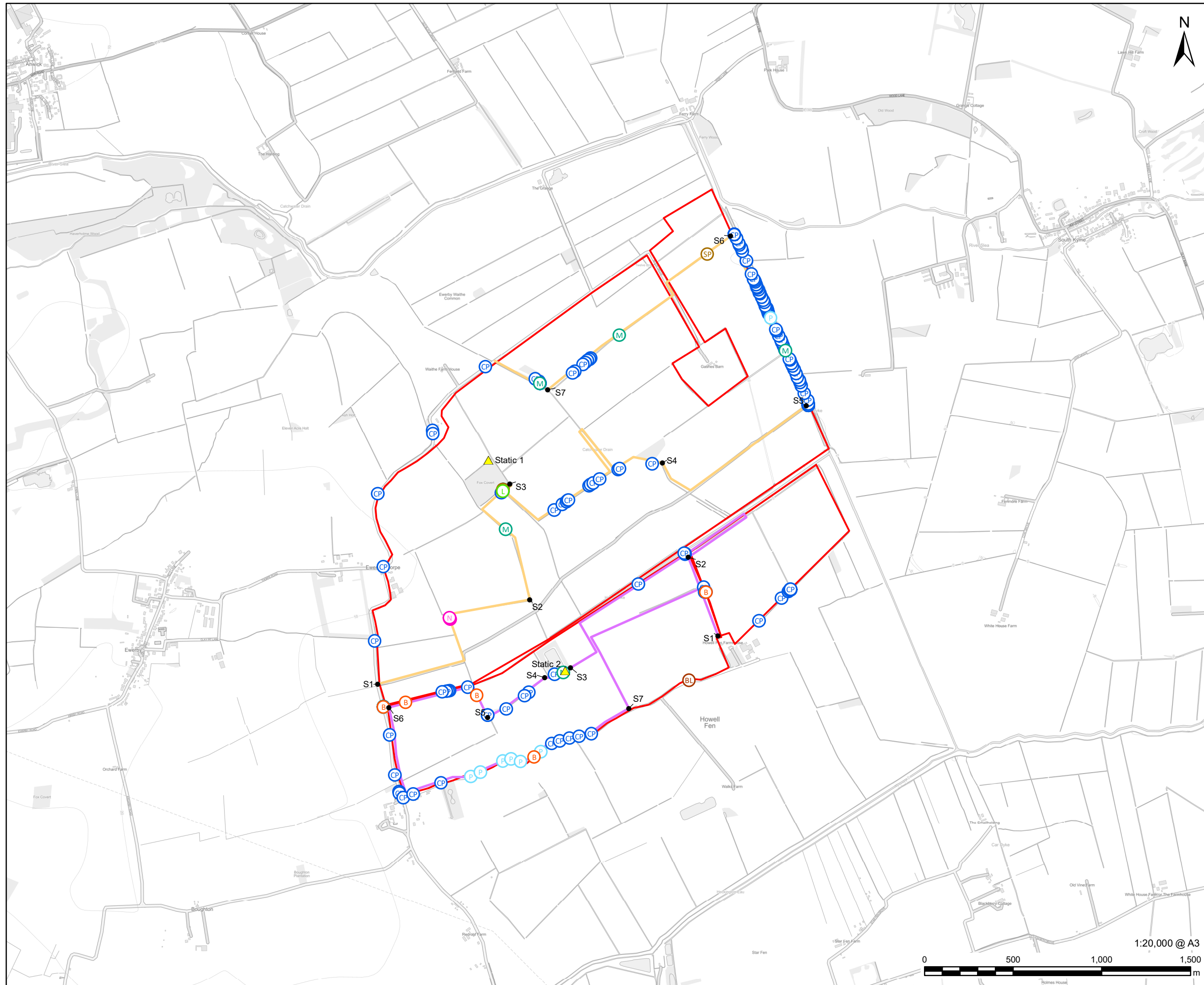
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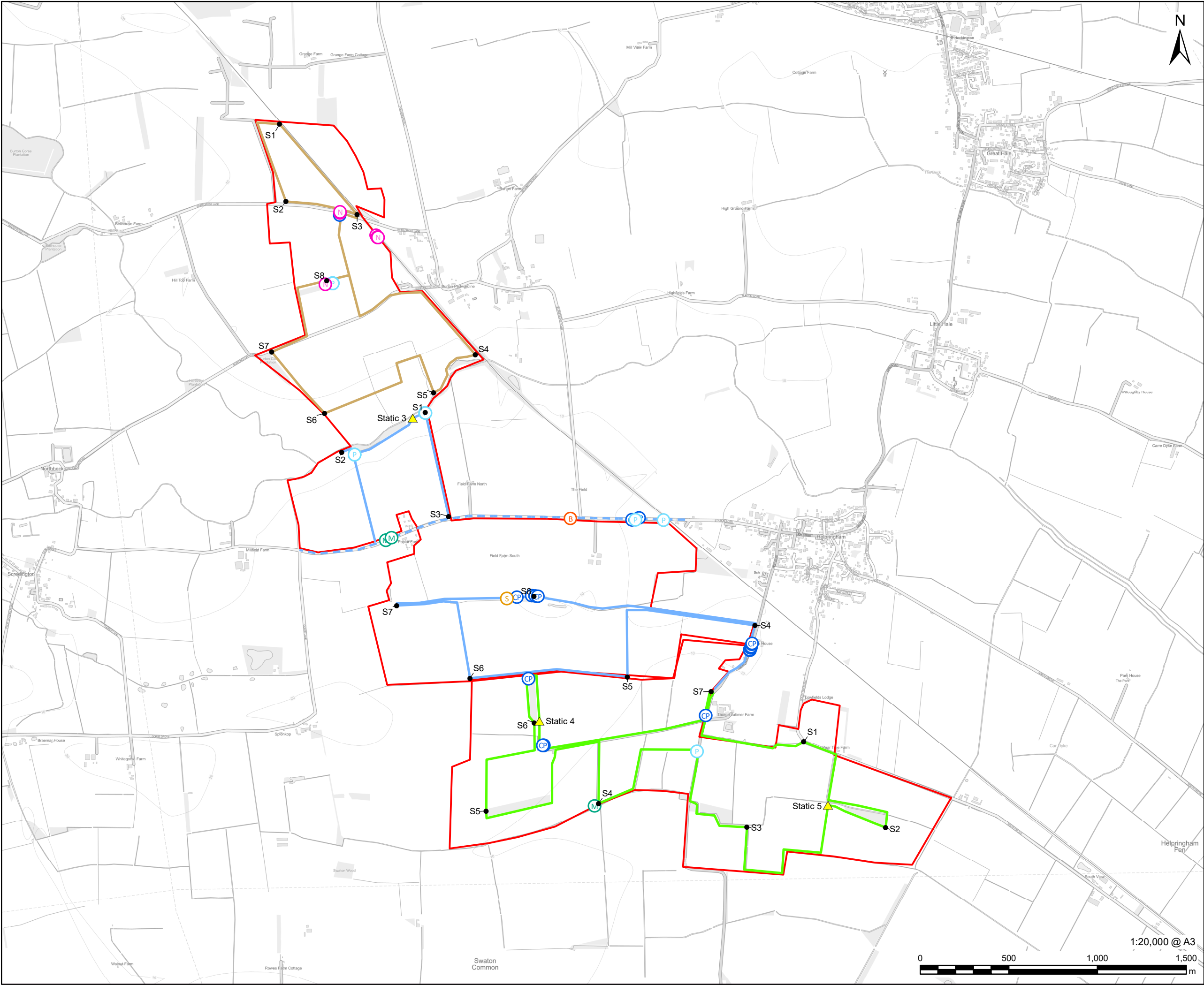
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FIGURE TITLE
BAT ACTIVITY SURVEY; TRANSECT 1, 2 AND 3, SUMMER 2022

FIGURE NUMBER
FIGURE 1.2



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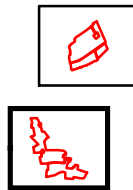
LEGEND

- Site boundary
- Transect 1
- Transect 2
- Transect 3
- Transect 3 (Driven)
- Static Detector Location
- Transect Stopping Point

Bat Species Records

- Barbastelle (*Barbastella barbastellus*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Myotis spec.
- Noctule (*Nyctalus noctula*)
- Pipistrellus spec.
- Serotine (*Eptesicus serotinus*)

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PROJECT NUMBER

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FIGURE TITLE

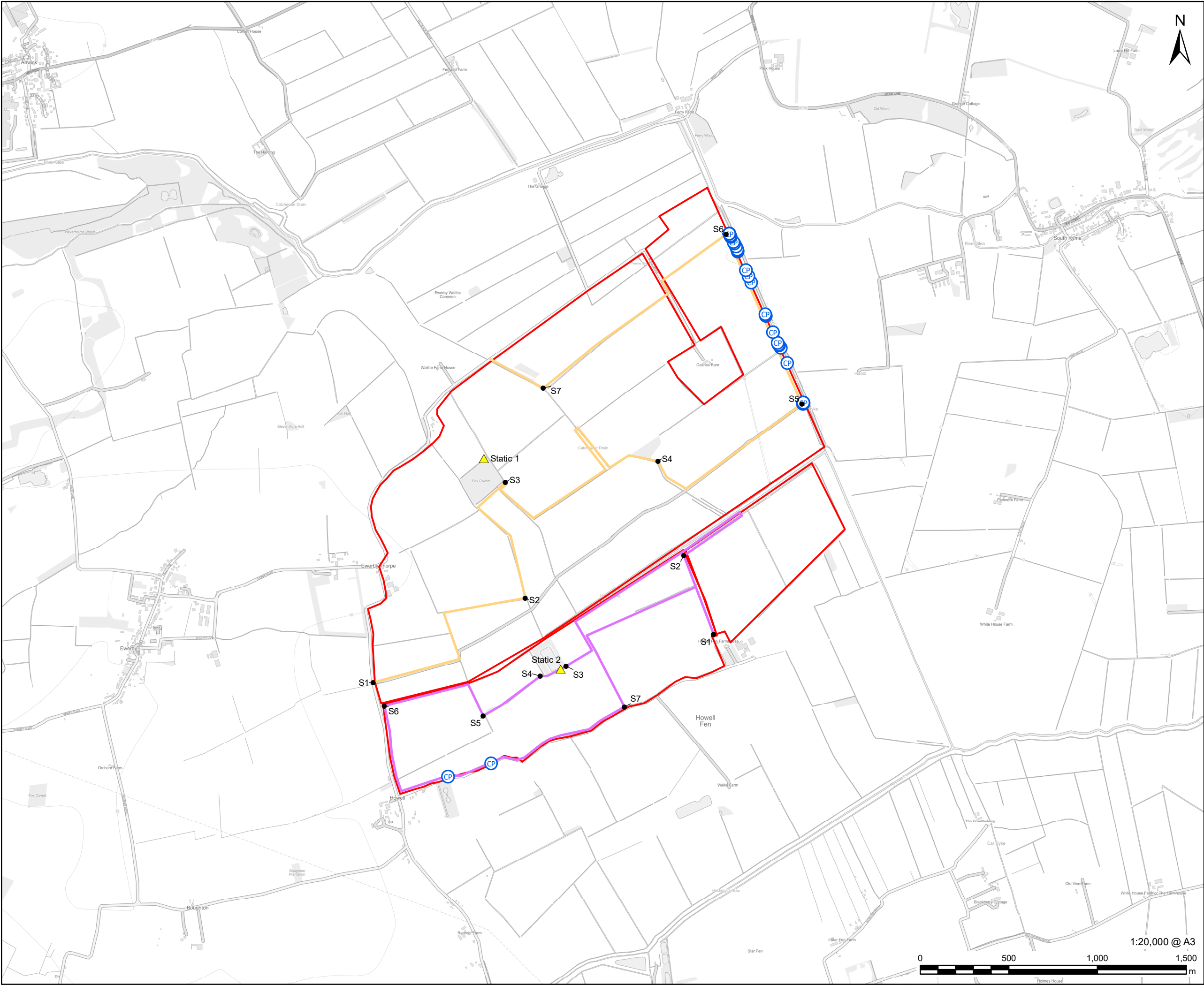
BAT ACTIVITY SURVEY; TRANSECT 1, 2
AND 3, AUTUMN 2022

FIGURE NUMBER

FIGURE 1.4

1:20,000 @ A3





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LEGEND

- Site boundary
- Transect 4
- Transect 5
- Static Detector Location
- Transect Stopping Point

Bat Species Records

- Common Pipistrelle (*Pipistrellus pipistrellus*)

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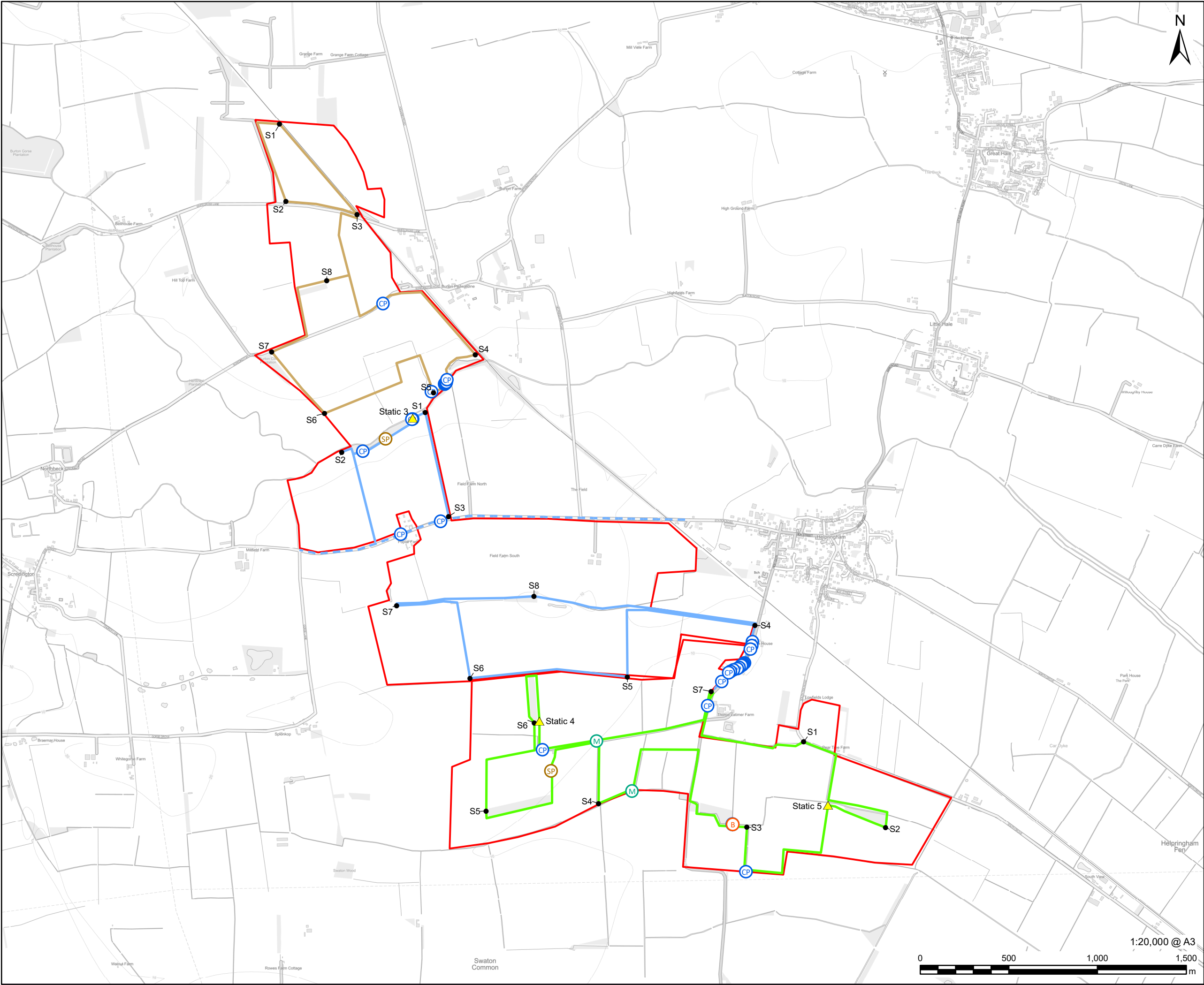
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FIGURE TITLE
BAT ACTIVITY SURVEY; TRANSECT 4 AND 5, SPRING 2023

FIGURE NUMBER
FIGURE 1.5



1:20,000 @ A3



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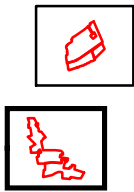
LEGEND

- Site boundary
- Transect 1
- Transect 2
- Transect 3
- Transect 3 (Driven)
- Static Detector Location
- Transect Stopping Point

Bat Species Records

- Barbastelle (*Barbastella barbastellus*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Myotis spec.
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)

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FIGURE TITLE

BAT ACTIVITY SURVEY; TRANSECT 1, 2
AND 3, SPRING 2023

FIGURE NUMBER

FIGURE 1.6

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